

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A piezoelectric vibration piece, characterized in comprising:

a pair of vibration arms that are formed by of a piezoelectric material, and ~~are~~ extending in a horizontal direction from a base ~~section~~;

a groove with a bottom ~~that is each~~ provided to in a length direction of each of the vibration arms, ~~and extending along a length direction of the corresponding vibration arm~~; and

a support ~~member section~~ that is provided in ~~such a manner so as~~ to across the groove in a width direction to integrally connect portions of the material structuring the vibration arm separated by the groove in the width direction.
2. (Currently Amended) The piezoelectric vibration piece according to Claim 1, ~~wherein~~ characterized in that an integral section of the support member is being integrated with the bottom ~~section~~ of the groove, and the integral section of the support section is formed so as to be thicker than at least an end section of the support member located on an opening side of the groove ~~of the support section~~.
3. (Currently Amended) The piezoelectric vibration piece according to Claim 1 ~~or 2~~, characterized in that wherein each of the vibration arms includes a surface side and a back side

opposite the surface side, and the groove is provided in each of the ~~to a surface side and at the~~
back side of each of the vibration arms.

4. (Currently Amended) The piezoelectric vibration piece according to ~~any one of~~
Claims 1 ~~to 3~~, further comprising characterized in that the a plurality of the support
members ~~section is plurally formed to in~~ one of the grooves.

5. (Currently Amended) The piezoelectric vibration piece according to ~~any one of~~
Claims 1 ~~to 4~~, wherein ~~characterized in that~~ each of the vibration arms has an ~~the~~ arm width ~~being~~
in a range from 50 μ m to 150 μ m, and at ~~the~~ depth of the groove is ~~being~~ at least 30 percent or
more, but less than 50 percent of ~~the material~~ a thickness of each of the vibration arms.

6. (Currently Amended) The piezoelectric vibration piece according to ~~any one of~~
Claims 1 ~~to 5~~, wherein ~~characterized in that~~ at the ~~groove~~ width of the groove provided in ~~to~~ each
of the vibration arms is at least 40 percent ~~or more~~ of an ~~the~~ arm width of the corresponding
vibration arm.

7. (Currently Amended) The piezoelectric vibration piece according to Claims 6,
wherein ~~characterized in that~~ the ~~groove~~ width of the groove provided in ~~to~~ each of the vibration
arms is at least 70 percent ~~or more~~ of the arm width of the corresponding vibration arm.

8. (Currently Amended) A piezoelectric device accommodating a piezoelectric vibration piece ~~in a case or a package, characterized in that~~ the piezoelectric vibration piece ~~comprises~~ comprising:

a pair of vibration arms extending in a horizontal direction from a base ~~section~~;

a groove with a bottom that is provided ~~to~~ in each of the vibration arms, and ~~is extending~~
~~along~~ in a length direction of the corresponding vibration arm; and

a support ~~section member~~ member ~~provided so as to across~~ crossing the groove in a width direction of the corresponding vibration arm and to integrally connecting portions of a material ~~structuring~~ the vibration arm separated by the groove in the width direction.

9. (Cancelled)

10. (Currently Amended) Electronic equipment utilizing a piezoelectric device that ~~is~~ accommodates ing a piezoelectric vibration piece ~~in a case or a package, characterized in that by~~
~~the piezoelectric device in which~~ the piezoelectric vibration piece ~~comprises~~ comprising:

a pair of vibration arms laterally ~~extending in a horizontal direction~~ from a base ~~section~~;

a groove with a bottom that is provided into each of the vibration arms, the groove and ~~is~~
~~extending~~ in ~~along~~ a length direction of the corresponding vibration arm; and

a support ~~member~~ section ~~provided so as to across~~ the groove in a width direction of the
corresponding vibration arm and to integrally connecting a material structuring portions of the
vibration arm separated by the groove in the width direction,

wherein upon vibration of the piezoelectric vibration piece, a clock signal ~~for control~~ is
derived.

11. (New) A piezoelectric vibration piece comprising:
a base;
at least one vibration arm formed of a piezoelectric material and extending from the
base;
the vibration arm including:
a first surface having a first groove formed therein; and
a second surface opposite the first surface, the second surface having a second
groove formed therein; and
a support member spanning each of the first and second grooves;
wherein a bottom of each of the first and second grooves extends substantially
orthogonally relative to the support member and is connected to the support member by an
integral member angling therebetween and traversing a width of the grooves.

12. (New) The piezoelectric vibration piece according to claim 11, wherein:
the vibration arms have an arm width in a range from 50 μm to 150 μm ; and
a depth of the grooves is in a range of 30 - 50 percent of a thickness of each of the
vibration arms.

13. (New) The piezoelectric vibration piece according to Claim 11, wherein a width
of each groove provided in the vibration arms is at least 40 percent of an arm width of the
corresponding vibration arm.

14. (New) The piezoelectric vibration piece according to Claim 11, wherein a width of the grooves provided in the vibration arms is at least 70 percent of an arm width of the corresponding vibration arm.